Didactic:
The Alphabet Soup of Laparoscopic Hysterectomy: LAVH, TLH, LSH & RH

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Professional Education Information

Target Audience
This educational activity is developed to meet the needs of residents, fellows and new minimally invasive specialists in the field of gynecology.

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HYST-704

Didactic: The Alphabet Soup of Laparoscopic Hysterectomy: LAVH, TLH, LSH & RH

Richard B. Rosenfield, Chair
Suketu Mansuria, Co-Chair

Faculty: Douglas N. Brown, Danny Chi Yung Chou, Anthony J. DiSciullo, Mary Ellen Wechter

This course is designed to provide the attendee with a systematic and comprehensive laparoscopic hysterectomy overview geared toward practical daily application, strategy, and instrumentation in the evolving world of minimally invasive surgery. Attendees will bridge the gap that separates novice from expert surgeons through a thoughtful overview of retroperitoneal anatomy, evolving techniques, conventional and robotic instrumentation, including surgical strategies to avoid complications. From new energy modalities and uterine manipulation systems to various access techniques, this course will focus on day-to-day practical applications of proven successful techniques. The course will also address issues such as cost containment and outpatient surgical programs, which align with new local and federal drivers. You may also choose to participate in the afternoon cadaveric lab that will provide a well-balanced focus from leading and emerging experts, to enhance and augment your surgical skills.

Learning Objectives: At the conclusion of this course, the clinician will be able to: 1) Explain and describe the rationale for various minimally invasive approaches to hysterectomy with specific and detailed focus on patient selection, patient positioning and port placement, relevant anatomy, technology, including an overview of cystoscopy; 2) comfortably identify and then perform fundamental laparoscopic skills, including but not limited to, identification and dissection of the retroperitoneal space, suturing and knot tying with and without robotic assistance for colpotomy closure, and refining surgical strategies for success when faced with intra-operative challenges; and 3) discuss how to augment and enhance your current surgical practice; and 4) review the economic impact of surgical decisions and how surgeons might proactively participate to improve cost efficiency and optimize outcomes.

Course Outline

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<tr>
<th>Time</th>
<th>Session</th>
<th>Faculty</th>
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<tr>
<td>7:00</td>
<td>Welcome, Introductions and Course Overview</td>
<td>R.B. Rosenfield</td>
</tr>
<tr>
<td>7:05</td>
<td>Practical Review of Anatomy (Retroperitoneum Included – Video-Based)</td>
<td>S. Mansuria</td>
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<tr>
<td>7:30</td>
<td>Fundamentals of Laparoscopic Surgery (Mastering the Basic Techniques of LH)</td>
<td>A.J. DiSciullo</td>
</tr>
<tr>
<td>7:55</td>
<td>Practical Use of Energy (Focus on Pros and Cons of Each Tool)</td>
<td>D.N. Brown</td>
</tr>
<tr>
<td>8:20</td>
<td>Straight Stick LSH and TLH (Stepwise Conventional Technique, Video-Based)</td>
<td>R.B. Rosenfield</td>
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<tr>
<td>8:45</td>
<td>Questions &amp; Answers</td>
<td>All Faculty</td>
</tr>
<tr>
<td>8:55</td>
<td>Break</td>
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</tr>
<tr>
<td>9:10</td>
<td>How to Avoid Complications in Laparoscopic and Robotic Hysterectomy</td>
<td>M.E. Wechter</td>
</tr>
<tr>
<td>9:35</td>
<td>Tackling the Large Uterus or Complex Pelvis</td>
<td>D.C.Y. Chou</td>
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<tr>
<td>10:00</td>
<td>Newest Technology – Where Are We, Where Are We Headed? (Include Single-Port, Culdoscopy, etc.)</td>
<td>D.N. Brown</td>
</tr>
<tr>
<td>10:25</td>
<td>Is Hysterectomy an Outpatient Surgical Procedure?</td>
<td>R.B. Rosenfield</td>
</tr>
<tr>
<td>10:50</td>
<td>Questions &amp; Answers</td>
<td>All Faculty</td>
</tr>
<tr>
<td>11:00</td>
<td>Adjourn</td>
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</table>
PLANNER DISCLOSURE
The following members of AAGL have been involved in the educational planning of this workshop and have no conflict of interest to disclose (in alphabetical order by last name).
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FACULTY DISCLOSURE
The following have agreed to provide verbal disclosure of their relationships prior to their presentations. They have also agreed to support their presentations and clinical recommendations with the “best available evidence” from medical literature (in alphabetical order by last name).
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Douglas N. Brown*
Anthony J. DiSciullo
Consultant: Covidien
Suketu Mansuria
Consultant: Stryker Endoscopy
Richard B. Rosenfield*
Mary Ellen Wechter*

Asterisk (*) denotes no financial relationships to disclose.
Practical Review of Retroperitoneal Anatomy

Suketu Mansuria, M.D.
Associate Professor
Assistant Director Gyn MIS
UPMC

Objectives
• Review pelvic sidewall (retroperitoneal) anatomy
• Review techniques to develop avascular spaces of the pelvis and identify uterine artery from its origin
• Review importance of retroperitoneal anatomy
  – In the management of commonly seen pathology during laparoscopic hysterectomies
  – In minimizing conversion to laparotomy and minimizing complications

Pelvic Sidewall
• Why is retroperitoneal anatomy important?
  – Important structures in the retroperitoneum:
    • Uterine artery-control of the uterine blood supply is 75% of a hysterectomy
    • Ureter-knowledge of its retroperitoneal course will minimize ureteral injury
  – Very rarely does pelvic pathology affect the retroperitoneal anatomy
    • Adhesions
    • Endometriosis

Pelvic Sidewall
• Fibroid uterus
  – Limited access to the traditional coagulation point
    • Usually due to very wide uterus or lower uterine segment/cervical fibroids
    • Control uterine artery at its origin
      – Better exposure
      – Decreased risk of ureteral injury
  – Control blood supply prior to myomectomy
    • Prior to traditional myomectomy
    • Prior to removing fibroids to improve exposure during a laparoscopic hysterectomy
Pelvic Sidewall

- Obliterated cul de sac/Scarred bladder flap
  - Leave the adhesions for the last step of the case
    - “Do the easy stuff first, and the hard stuff becomes easy!”
    - Devascularize the uterus before attempting adehesiolysis
      - Control the uterine blood supply without injuring the bowel or bladder
      - Devascularizing the uterus prior to adhesiolysis will minimize bleeding/improve visualization-decreasing the risk of bowel/bladder injury

- Bleeding
  - Control bleeding uterine pedicle
    - Decreased risk of ureteral injury
  - Endometriosis can alter course of ureter
  - Adnexa adherent to sidewall
    - Allows complete removal of sidewall
    - Minimize risk of ovarian remnant syndrome
  - Allows for complete ureterolysis
    - Ureter travels beneath the uterine artery

Pelvic Sidewall

- Two important structures in the pelvic sidewall/retroperitoneum
  - Ureter-ALWAYS found along the posterior leaf of the broad ligament
  - Uterine Artery-ALWAYS crosses above the ureter (water under the bridge)

Pelvic Sidewall

- Two Important Avascular Spaces
  - Pararectal space
  - Paravesical space
  - Both spaces are triangles and share a common base – the uterine artery
  - As long as you can identify one boundary of either space, you can develop both spaces and identify all the other boundaries
Three main surgical approaches to identifying the uterine artery from its origin off the hypogastric artery:
- Posterior approach
- Lateral approach
- Anterior approach

Choice of approach will be determined by visualization and anatomy.

### Posterior Approach
- Make a peritoneal incision between the IP ligament and the ureter (if there is difficulty identifying the ureter, start at the pelvic brim)
- Extend the peritoneal incision from the pelvic brim towards the uterus-have your assistant pull the peritoneum medially
- Develop the pararectal space
- Identify all borders of the pararectal space and use them to identify the paravesicle space

### Lateral Approach
- Make a peritoneal incision from the round ligament parallel to the IP ligament
- Have your assistant pull the peritoneal edge medially
- Develop the pararectal space
- Identify all borders of the pararectal space and use them to identify the paravesicle space
Pelvic Sidewall

- Anterior Approach—Used when the other two approaches are not possible (i.e., obliterated cul-de-sac, very large and broad uterus)
  - The medial umbilical ligament is identified
  - The MUL is skeletonized and followed retrograde towards the uterine artery
    - Concentrate dissection on the medial side of the ligament (the paravesicle space will be developed)
    - Superior vesicle artery will be encountered before the uterine artery—SVA originates from the posterolateral aspect of the hypogastric artery and runs upwards to the bladder
  - Once the uterine artery identified, use it to identify all other structures

Thank You

Questions?
Fundamentals of Laparoscopic Hysterectomy

Anthony J. DiScullo MD
Director of Gynecology
Mount Auburn Hospital

Consultant: Covidien

Objectives

- To review prevalence and trends of laparoscopic hysterectomy
- To discuss fundamental technique of various methods of laparoscopic hysterectomy
- To examine pathways to maintain skills and improve performance

Hysterectomy

- Abdominal
- Vaginal
- Laparoscopic
  - TLH
  - LSH
  - LAVH
  - RALH

Hysterectomy in USA

- 570,000: National Hospital Discharge Survey. (DeFrances CJ, et al. Natl Health Status Rpt 2008; 5:1-20)

Hysterectomy Trend

Pre-op Evaluation

- H & P
- Bleeding: Endo Bx
- Rapid growth of fibroids in high risk patient
  - Peri- or postmenopause
  - Tamoxifen use
- Imaging: U/S or MRI
- Consent

Consent

- Define hysterectomy, ovarian preservation
- Complications
- Cystoscopy
- Tissue extraction:
  - Vaginal
  - Abdominal: morcellation vs laparotomy
- Discuss possibility of conversion to laparotomy
- Use visual aids
Basic Rules for Success

- Follow the same routine for each case
- Progress from "easy" to "difficult" cases
- Use a "crutch" or two if necessary (fancy electrosurgical devices, barbed sutures, cuff closure systems such as Endo Stitch, Endo360)
- Get help when needed

Room Check

[video of room check]

Equipment

- Scopes: 0, 30, 45 degree; 5 or 10mm (3mm)
- Camera: HD
- Tower: HD screen, recording device, insufflation, electrosurgical generator
- Instruments

Instruments

Uterine Manipulators and Colpotomizers

Tissue Handling

- Use bowel graspers
- Beware of "hot" instruments
- A free needle lying on peritoneal surface is harmless; it becomes a weapon when grasped
- Dissect, don't pull
Positioning

- Knees slightly higher than ASI
- Arms tucked

Table Setup

- Uterine Manipulator Foley (2 or 3-way)

Room Setup

- Video

Trocar Placement

- Multiport
- Single Incision

Robot Assisted Laparoscopic Hysterectomy

- Open vs. closed
- Secondary trocar positions, medial to ASIS
- Intraperitoneal identification
- Transillumination
Starting the Case

- Survey and explore (peek and shriek or proceed?)

Intraperitoneal Landmarks

- Round ligament, inguinal ring
- Bladder reflection
- Uterosacral ligaments
- Sacral promontory, pelvic brim
  [video: surface anatomy]

Dissection

- Requires exposure
  - Patient position
  - Operator position
  - Port placement
  - Skilled assistant
  - Camera navigation

Camera

- 5mm HD scope
- Record and review everything
- Field of vision: center, zoom, panning
- Keep the view clear
  - Suction; irrigate only when necessary
  - FRED

Intraperitoneal structures

- Survey entire abdomen
- Ureters, bladder, I-P ligaments, isthmus, bladder flap
  [video: survey: cuff delineation]

Identify Ureter

- Transperitoneal vs Retroperitoneal:
  - (VIDEO: transperitoneal and sidewall dissection)
Follow a Routine: TLH

- Utero-ovarian and round ligaments: ~1cm lateral to cornua
- Consider removing tubes
  [video: U-O lig, round lig]

Follow a Routine: TLH

- Skeletonize uterine vessels
  [video: anterior and posterior leaf dissection]

Follow a Routine: LSH

- Transect corpus at or below internal os
- Ablate or core cervix if leaving ovaries
- Tissue extraction: cul-de-sac or minilap
  - Intraserosal knife morcellation*
  - Containment bag


TLH: Vaginal Cuff
[video: incision and repair]

LSH: Cervical Transection
[video BIL loop, ablate cx]

LSH: Tissue Extraction
[video: culdesac & minilap]
LAVH

Vaginal component
- Culdotomy
- Tissue extraction
- Cuff repair

LAVH: Tissue Extraction

(video: knife morcellation, cuff repair)

Finishing Up

- Check for bleeding (drop pressure to 8mmHg, or “underwater exam”)
- Consider cystoscopy: Indigo carmine, methylene blue, pyridium pre-op, D50
- Bowel integrity test
  (video: bowel test)

Robot Assisted Laparoscopic Hysterectomy

Multiport

Single Incision

Side docking

U.S. Robotic Procedure Adoption Q4 2012

RALH

- Quick learning curve
- Versatile platform
- Expensive
- Otherwise, dissection is same for TLH
Other Considerations

- Should pelvic support procedures be done prophylactically?
- What are the concerns about morcellation?
- How can a generalist maintain skills?

Pelvic Support

<table>
<thead>
<tr>
<th>Tissue Disruption</th>
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<tbody>
<tr>
<td>Primary prognostic factor in LMS is complete en bloc resection with clear margins</td>
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</tbody>
</table>

Morcellation

- Undiagnosed malignancy = 1/370
- Sarcoma: risk factors
  - Post menopausal bleeding
  - PM fibroid growth
  - Tamoxifen use or history
- Pre-op evaluation: Ebx; no reliable test for sarcoma (index of suspicion)

Tissue Disruption

Primary prognostic factor in LMS is complete en bloc resection with clear margins


**Tissue Disruption**

Sarcoma must be removed *en bloc* to avoid tumor dissemination


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**Keeping Up Skills**

435,000 hysterectomies/yr  
56,000 AGOG members  
= 7.7 cases/year

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**Skills Maintenance: Case Volume**

Doll, K et al, Surgeon Volume and Outcomes in benign Hysterectomy  
J Minim Invasive Gynecol 2013; 20: 554-561

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**Performance Enhancement**

- Simulation
- Practice
- Technological advancements

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**Technology Hype Cycle**

- Peak of inflated expectations
- Plateau of productivity
- Trough of disillusionment
- Slope of enlightenment

---

**Practice**

OR is NOT place to practice suturing, knot tying
Conclusions: Master The Basics

- Understand how your instruments perform
- Camera navigation
- Dissection, LOA
- Skeletonizing vessels before sealing
- Suturing
- Tissue extraction

Fundamentals: Basic Principles

- Standardize but be prepared to adapt
- Know what’s under peritoneal surface
- Instruments: reusable vs disposable
- Tissue handling
- Work with your assistant, not independent of assistant

References

7. Doll, K et al. Uterine Volume and Outcomes in benign Hysterectomy / Minim Invasive Gynecol 2013; 20: S54-S63 NCCN Clinical Practice Guidelines in Soft Tissue Sarcoma v1.2
Practical Use Of Energy In Minimally Invasive Gynecologic Surgery

Douglas N. Brown, MD, FACOG, FACS
Chief, Minimally Invasive Gynecologic Surgery
Director, Center for Minimally Invasive Gynecologic Surgery
Massachusetts General Hospital
Harvard Medical School

Objectives

At the conclusion of this activity, participants will be better able to:

- Explain the basic principles of electrosurgery, fulguration, desiccation, vaporization, and thermal spread in minimally invasive gynecologic surgery
- Identify appropriate minimally invasive energy sources and their applications in various surgical procedures in addition to identifying their inherent limitations
- Apply the knowledge learned to increase patient safety, and surgical efficiency and efficacy in laparoscopic gynecologic surgery

Basic Principles of Electrosurgery

- **Cycle**: time required to pass through one complete positive and one complete negative alternation of current

  ![Cycle Diagram](image)

- **Frequency**: the number of cycles per sec

  ![Frequency Diagram](image)

- **Electrical Current** is created by the movement of electrons

  ![Electrical Current](image)

- **Voltage** is the force that causes this movement

  ![Voltage Diagram](image)

- 2 Types of **Electrical Current**:
  - **Direct Current (DC)**
  - **Alternating Current (AC)**

  ![Alternating Current](image)

Basic Principles of Electrosurgery

- **Electrosurgical Units (ESU)** convert standard electrical frequencies from the wall outlet (50 to 60 Hz) to much higher frequencies (500,000 to 3,000,000 Hz)

  ![ESU](image)

Disclosure Slide

- I have no financial relationships to disclose

  ![Disclosure Slide](image)
Effects of Applying Electrical Current

- **Desiccation**: Direct contact, causes dehydration and protein denaturation
- **Vaporization**: No direct contact, high heat vaporizes the tissue. The cell “explodes” so no carbonization
- **Fulguration**: No direct contact, current arcs between the electrode tip which causes tissue carbonization
- **Thermal Spread**: Dissipation of heat (usually steam) away from the application site that results in cellular necrosis (*delayed necrosis*)

Basic Principles of Electrosurgery

*Monopolar versus Bipolar*:

The main difference between these two modalities:

- **Monopolar surgery**: the current goes *through the patient* to complete the current cycle
- **Bipolar surgery**: the current only passes through the tissue *between the two electrodes* of the instrument

Clinical Applications

**Monopolar Electrosurgery**:

- Cut (Low Voltage)
  - Less thermal spread
- Coagulate (High Voltage)
  - Best in high-resistance areas (Fat, Scar tissue)
  - Fulguration (Surface areas)

**Bipolar Electrosurgery**:

- Cut (Low Voltage)
  - Less effective (cannot vaporize tissue)
- Coagulate (High Voltage)
  - Best in vascular hemostasis (3 to 7 mm blood vessels)
  - Coapting and thermally welding the vessel

Videos
Advanced Energy Sources

- Ultrasonic Energy:
  - Ultrasonic energy is acoustic (sound) energy
  - The surgical device converts ultrasonic energy into mechanical energy (vibration) then into thermal energy (heat) at the functional tip
  - 80-100°C results in coagulum without dessication (occurs at temp > 100°C)

Ultrasonic Energy

- Advantages:
  - Minimal thermal spread
  - Decreased carbonization and smoke plume
  - No risk of electrical injury (no current)
  - Versatility – dissect, cut, coagulate in one instrument

- Disadvantages:
  - Limited ability to coagulate vessels > 5mm
  - Tip remains HOT after usage
  - Poor tissue grasper
  - User-dependent nature
  - Can have extensive thermal spread – delayed necrosis

Ultrasonic Energy

- Harmonic Ace® Shears (Ethicon Endo-Surgery, Inc., Somerville, NJ 08876)
- Sonicision™ (Covidien, Mansfield, MA 02048)

Ultrasonic Energy

- SonoSurg™ (Olympus Surgical Technologies Southborough, MA 01772-2104)

Videos

Advanced Vessel Sealing Devices

- Advanced bipolar ESU’s are highly pulsatile
  - Monitor tissue impedance and temperature
  - Adjust current and voltage continuously
  - “Alerts” that switch off or signal the surgeon

To avoid prolonged activation, carbonization, and thermal spread

This has NOT been evaluated in literature
Advanced Vessel Sealing Devices

- **Advantages:**
  - "Minimized" thermal spread
  - Decreased carbonization and smoke plume
  - Coagulate, coaptation, cut in one instrument
  - Seals vessels ≥ 7 mm in diameter

- **Disadvantages:**
  - Some have poorer dissecting capability
  - User-dependent nature

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Advanced Vessel Sealing Devices

- **LigaSure™** (Covidien, Mansfield, MA 02048)

- **EnSeal® G2** (Ethicon Endo-Surgery, Inc., Somerville, NJ 08876)

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Advanced Vessel Sealing Devices

- **PKS Omni™** (Olympus Surgical Technologies Southborough, MA 01772-2104)

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Advanced Vessel Sealing Devices

- **Videos**

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Advanced Vessel Sealing Devices

- **What does the data tell us?**

  **Comparative Studies of Energy Sources in Gynecologic Laparoscopy**
  
  Kenneth S. K. Lau, MBBS, FRANZCOG, and Stephen E. Lyons, BSc, PhD, MBBS, FRANZCOG
  
  From the Department of Gynecology, Royal Perth Hospital, Western Australia, and the Women’s and Infants’ Health Network, Royal Perth Hospital, Perth, Australia.

  *J Minim Invasive Gynecol. 2013 May-Jun;20(3):308-18*
Advanced Vessel Sealing Devices

- Lab & Animal Studies:
  - Vessel Burst Pressure
  - Sealing Times
  - Lateral Thermal Spread
  - Smoke Plume (Visualization)

*J Minim Invasive Gynecol. 2013 May-Jun;20(3):308-18*

Advanced Vessel Sealing Devices

- Blood Loss, Operative Time, Post-Operative Pain:
  - Traditional Mono/Bipolar > Advanced Vessel Sealers
- No statistical difference in Complication Rates
- Vessel Burst Pressures:
  - LigaSure (385 +/- 76 mm Hg)
  - PKS (290 +/- 100 mm Hg)
  - EnSeal (255 +/- 80 mm Hg)
  - Harmonic ACE (204 +/- 59 mm Hg) (5 mm vessels)

*J Minim Invasive Gynecol. 2013 May-Jun;20(3):308-18*

Advanced Vessel Sealing Devices

- Lateral Thermal Spread Varies Greatly:
  - LigaSure (4.5 mm to 6 mm)
  - PKS (5 mm to 8 mm)
  - EnSeal (0.8 to 1.2 mm)
  - Harmonic ACE (0.6 to 1.5 mm)

*J Minim Invasive Gynecol. 2013 May-Jun;20(3):308-18*

Recommendations

- There is insufficient evidence for one vessel sealing technology to be considered superior to the other
Therefore:
- Rely on one to two disposable energy sources (+/- one reusable source)
- Become VERY familiar with YOUR energy source
  - Its advantages and disadvantages
- Be Safe, Be Smart, Be Educated…

Recommendations

- In The End…
  - It’s not the Wand,…It’s the Wizard!
References


**Learning Objectives**

- Identify Practical Tips and Tricks for Routine Use in "Straight Stick Laparoscopy"
- Review of Ergonomics, Safe Patient Positioning, and Strategic Approach to Laparoscopic Hysterectomy
- Understand the Concept of a Team Approach to Laparoscopy

**The Alphabet Soup of Hysterectomy**

- TVH
- LAVH
- LSH
- TLH
- RH
- TAH

**Room Set up**

- Importance of Table Selection
  - Height, Tberg, gelpad, armboards, sleds
- Stirrups
  - Proper use and positioning and how this can lead to problems
- Assist
  - Slave tower, ergonomics
- Scrub Tech
  - Position, table setup, Role
- Sleds, Bair Hugger
Video of Room Setup

Laparoscopic Entry

- Be Safe and Consistent
- Use trocars you are familiar with to avoid loss of pneumo, slippage, unplanned trauma
  - Thin patient → Subcutaneous Emphysema
  - Thick Patient → Trocar Slippage
- Consider towel clips for elevation of anterior abdominal wall (image)
- Consider LUQ entry if concern of adherions - Palmer's Point

Room Videos

- Video- towel clips
- Video- cracked light rod
- Video- 30 degree scope

LSH Pearls- the room setup

- Operating Room Table- height and tilt
- Proper Positioning- Arms and Legs
- Dual Monitors
- Camera Resolution and Scope Quality
- Uterine Positioning

Is this safe?

LSH Pearls- the surgeon

- “Visualization is everything” (referencing image quality)
- Maintain hemostasis to ensure visualization
  - Red absorbs light and darkens image
- Slow and steady, elegant movements
- Instrument sets and hand size
- 30 Degree Laparoscope
I Have a Choice?

LSH Pearls - the surgeon

- Seal vessels prior to transection
- Ablate endocervical canal for reduced cyclic bleeding - no need to oversew
- Morcellation
  - Proper consent, consider in bag
  - Run the outside of specimen
  - Morcellator should remain in fixed position
  - Retroperitoneal injury hard to defend

LSH video tips

- “Lean Technique” Video
- “Morcellation” Video
- “Amputation” Video
- “Retrograde Filling the Bladder” Video

TLH learning curve

- Uterine vessel laceration at cuff
  - Solution: Reverse Horseshoe Technique on TLH vessels - Video
- Loss of Pneumoperitoneum at colpotomy
  - Solution: occluder with infant bulb, assist to pull up on cup
- Suturing
  - Large bites, mucosa, uterosacrals, barbed suture

TLH Pearls

- Consider mastery of LSH prior to TLH
- Use of Colpotomizer - drop ureters, visualize colpotomy target
- Harmonic Scalpel best with plastic cup
- Suturing - practice with Lap Trainer
- Knot Pusher or Barbed Suture
- BEWARE of magnification

TLH Pearls

- Hemostatic Colpotomy
- Bladder Identification and Retrograde Filling
- Scope angles and suturing
- Avoiding separation and dehiscence
- Maintaining pneumoperitoneum
TLH Pearls

- Retrograde fill the bladder if not absolutely certain of reflection (video)
- Use GOOD NEEDLE DRIVERS
  - Surgeon preference varies
  - Self righting can be a problem at cuff

TLH Videos

- “Reverse Horseshoe”
- “Colpotomy”
- “Cuff Closure”
How to avoid complications in laparoscopic or robotic hysterectomy

Mary Ellen Wechter, MD, MPH, FACOG
Gynecologic Surgery
Baptist Medical Center
North Florida OB/GYN
Jacksonville, FL

Disclosures
- I have no financial relationships to disclose

Objectives
- To review the etiology of surgical complications
- To discuss the incidence and types of complications specific to laparoscopic and robotic hysterectomy
- To explore risk-reducing techniques in laparoscopic and robotic hysterectomy
- To review components of safe systems (checklists, standardization, etc.)

Complications are multifactorial
- Substrate
- System/situation
- Surgeon

Patient and pathology strongly influence odds of complications...
- Obesity: OR 2.84 (95% C.I. 1.53-5.27)
- Prior pelvic surgery: OR 2.47 (95% C.I. 1.39-4.39)
- Prior Cesarean: OR 2.04 (95% C.I. 1.01-4.1)

The challenges of the case demand an appropriate plan to reduce risk
- pictures

Operating situation and system can protect patients or contribute to error

- Communication
- Standardization and checklists
- Effectiveness of the team
- Distractions and interruptions
- Equipment
- Time of day

Surgeon factors are most easily modified to reduce risk

- Knowledge and dexterity
- Judgment
- "Personality"
- Tool repertoire
- Habits

Complication frequency in laparoscopic (and/or robotic) hysterectomy

- Overall complications: 5-11% (up to 34%)
- Major bleeding: 4.6%
- Infection: 9%
- Ureteral injuries: 1.6% (universal cystoscopy)
- Bladder injuries: ~3% (universal cystoscopy)
- Bowel injuries: 0.1-1%


Steps of safe hysterectomy

1. Position the patient
2. Place your manipulator and ports
3. Create an adequate bladder flap
4. Identify the ureter
5. Secure the ovarian vessels
6. Secure the uterine vessels
7. Cut and close the cuff
8. Perform safety checks

Safe positioning

- Nerve injuries: 0.2-2% of pelvic surgeries
- Use only the necessary degree of Trendelenburg
- Frictional materials are equivalent

Pink egg-crate foam bed preparation

Gel pad bed preparation

Achieving laparoscopic access

- Nearly 50% of laparoscopic complications occur during entry
- An unstable patient after access is bleeding
- “Best” method is unclear
- Risk increases with # entry attempts
- Angle of entry is important
  

Achieving laparoscopic access

- Open entry (Hasson) may reduce risk of
  - Conversions
  - Vascular injury
  - Occult bowel injury
- Additional tools to decrease risk
  - Towel clips to elevate abdomen
  - High pressure entry (20-30mm Hg)
  - LUQ (Palmer’s point)


Pearls of LUQ entry

- Video

Bowel injury in laparoscopic surgery

- Occurs in 0.5% (up to 2.4%)
- Half of bowel injuries occur during access
- Risks: adhesions, inexperience, and complexity
- Grasp with Hunter or bowel grasper
- Repair significant bowel injuries immediately

### Bowel injury in laparoscopic surgery

- **Intraoperative signs of bowel injury**
  - Foul smell from Veress
  - Leaking bile
  - Leaking through rectum during integrity test
- **Postoperative signs of bowel injury**
  - Present on pod #3-4
  - Fever, ileus, tachycardia, local port site pain
  - Mortality from undiagnosed bowel injury is 28%


### Identify the ureter in the retroperitoneum

- Open the retroperitoneum ("safety triangle")
- Sweep parallel to vessels and ureter
- Avoid any bleeding in the retroperitoneum
- If ureter is not visible: go higher, go deeper

### Safely securing the IP

- Most ureter injuries occur at the IP
- Open the retroperitoneum to identify ureter
- Create “safety window” between IP and ureter
- Secure the IP pedicle off tension
- **LigaSure™, Gyrus™, Enseal™, harmonic scalpel, suture, Hem-o-lok® clips, Endoloop®**
- Control the proximal pedicle

### Entering the retroperitoneum using the safety triangle

*video*

### Entering the retroperitoneum and securing IP pedicle

*video*  

### Creating the bladder flap

- Bladder injury occurs in 2.9%
- Most injuries occur during access or adhesiolysis
- Deflect the bladder adequately (clear the vagina as it drapes over colpotomizer cup)
Identify the colpotomizer cup
Tip: to see the cup, push in and up

Creating the bladder flap

Managing bladder adhesions safely
1. Posterior to anterior: find the posterior cup and isolate vessels
2. Inferior to superior: find the anterior cup inferior to scar
3. Lateral to medial: isolate and transect the scar
4. Retrograde fill the bladder
5. Cystoscopy

Managing a difficult bladder flap

The most critical step of managing bladder injury is DIAGNOSIS

- Intraoperative: gas and or blood in bag, ascites
  - Fill the bladder retrograde to check for leaks and bladder margins
  - Cystoscopy to check for stitch and ureters
- Postoperative: rise of creatinine, dysuria, oliguria, hematuria, ileus, ascites, fever
  - CT cystogram or retrograde cystogram
  - IVP

Bladder repair
- Laparoscopy, cystoscopy and repair of defect
- 2-layer running suture with 3-0 vicryl
- Check for watertight after first layer
- Keep foley 7-10 days + normal voiding cystogram
- Video
<table>
<thead>
<tr>
<th>Secure the uterine pedicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Skeletonize the uterine pedicle</td>
</tr>
<tr>
<td>• Elevate the fimbriae to avoid ureteral injury</td>
</tr>
<tr>
<td>• Seal vessels off tension</td>
</tr>
<tr>
<td>• Don’t let go until you know</td>
</tr>
<tr>
<td>• “Bouquet”: If bleeding, re-grasp the pedicle and lift up and medially before re-sealing</td>
</tr>
<tr>
<td>• Relax uterine tension to check for bleeding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skeletonize uterine vessels</th>
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<table>
<thead>
<tr>
<th>More tools for securing the uterine pedicle</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Make a colpotomy to access a large or difficult-to-skeletonize uterine pedicle</td>
</tr>
<tr>
<td>• Seal the ascending uterine vessels and dissect them down to the ring</td>
</tr>
<tr>
<td>• Secure the uterine artery in retroperitoneum</td>
</tr>
</tbody>
</table>

<table>
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<tr>
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</tr>
</thead>
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</tr>
</tbody>
</table>
**Cut and repair the cuff to avoid bleeding, infection, and dehiscence**

- **Cuff cellulitis:** 1.4%
  - Treat preoperative BV
  - Avoid hematoma (risk for infection)
- **Cuff dehiscence:** 0.2-4.1%
  - Etiology unclear
  - Ideal colpotomy technique also unclear
  - Minimize char and tissue devitalization
  - Take generous bites with suture; include mucosa


---

**Minimize thermal damage during colpotomy**

- **video**

---

**To repair the cuff, take adequate bites of tissue; minimize foreign body, contamination, and bleeding**

- **video**

---

**Safety checks after laparoscopic or robotic hysterectomy**

- Bleeding
- Bladder
- Bowel
- Below

---

**Universal cystoscopy after hysterectomy**

- Lower urinary tract injury occurs in 4%
- Unidentified injury has serious consequences
- Visual exam fails to detect 60-90%
- Cystoscopy detects over 90%
- Cystoscopy takes 3-5 minutes, uses reusable instruments, has rare complications, is easily learned


---

**Tips to avoid bleeding during laparoscopic or robotic hysterectomy for large uteri**

- Release the uterus from the sidewalls
- Identify the ureter in retroperitoneum
- “Take what the defense gives you”
- Seal both uterines before transection
- If inadequate uterine lift, consider a supracervical hysterectomy first
The role of the robot in laparoscopic hysterectomy
- Picture

Avoiding complications in robotic surgery
- Incidence of complications in robotics ≈ traditional laparoscopy
- Unique risks from lack of haptics and third arm
  - Don’t grab bowel
  - Don’t retract vessels out of your view
  - Keep electrosurgical instruments in view
- Robot malfunction is uncommon (3.5%)
- Theoretical increased risk of hernia


How to create a safer system/situation
- Standardization
- Communication and effective team
- Limit interruptions and distractions
- Checklists

The case for standardization of procedures
- Picture

Adopt standardization
- The laws of probability favor variable outcomes
- Working memory has a limited capacity
- The team knows the plan and can anticipate

Practice Effective Communication
- >12% of communication is not understood
- Clear, concise, relevant, complete, and “read-back”
- Prevents errors, dangerous assumptions, and strife

Nance J, Why Hospitals Should Fly, 2008,
Effective communication

- Insist on few interruptions and distractions
  - Interruptions and distractions break the flow
  - It takes 20 minutes to recover from interruption
  - Working memory has limited capacity
    - Can hold and manipulate 7-9 chunks of information
    - Can discern 3 relationships simultaneously


Checklists reduce risk

- Reduce perioperative complications/deaths by 30-50%
- Increase efficiency
- Reduce complexity to manageable tasks
- Valuable for routine and non-routine situations
- Good checklist: uncluttered, simple, ≤ 9 items, exact wording
- To use a checklist effectively, assume an error


Conclusions

- Complications result from interplay between substrate, surgeon, and situation/setting
- Surgeons can reduce risk by developing a rich repertoire of surgical tools and safe habits
- Achieving access is a time of high risk

Conclusions

- Universal cystoscopy may protect against poor outcome by avoiding delayed recognition
- Time spent on avoidance or intraop detection of complications is time well-spent
- A safe operative setting includes at least:
  - Standardized use of best practices
  - Effective communication and read-back
  - Limited distractions
  - Reliance on checklists
References


References
Tackling the LARGE Uterus

The Alphabet Soup of Laparoscopic Hysterectomy: LAVH, TLH, LSH & RH

Dr Danny Chou
MBBS
MRCOG
FRANZCOG
Sydney Women's Endosurgery Centre

Objectives

- Highlight preoperative assessment of patients needing Lap Hysterectomy (LH) for Large Uterus (LU)
- To understand strategies for LH for LU
- To understand the rationale of different ports placement for LH for LU
- To understand different approaches to haemostatic control during LH for LU
- To demonstrate application of Lap Uterine Artery Ligation through Anterior Approach
- To demonstrate different techniques of laparoscopic morcellation

Outline of presentations

- Overview of strategies, techniques, instrumentation and port placements
- Videos of TLH for larger uterus highlighting pertinent strategies and techniques:
  - Globular fibroid uterus of 2.5kg
  - Large posterior low retroperitonealised fibroid of 1.7kg causing bilateral ureteric compression and renal failure
  - Large lateral broad ligament fibroid of 4.2kg – lap assisted myomectomy
  - Many others...
  - Ending with a “Step by Step” case of a TLH of a 1.6 kg uterus

Main operative challenges with LU

- Access:
  - Uterine manipulation, angles scope, strategic port placement, access improving myomectomy
- Haemostasis:
  - Secure reliable haemostasis, Uterine Artery Ligation (Ant Approach)
- Morcellation:
  - Vaginal, lap knife, lap power morcellation, in bag morcellation, mini-laparotomy
  - T Malignancy
- Operative time:
  - Surgical Efficiency
  - Forewarn need for instrument to nursing staff

Preoperative

- Know your “enemy” and yourself
- Exclude malignancy
- US +/− MRI for maximal information
- GnRH?
- Allocate time: There can be an efficient way but not always a fast way
- Book the procedure with experienced team
- Explain possibility of conversion:
  - Mini-laparotomy, Pfannenstiel or Midline,
  - Lap assisted mini-laparotomy
- Bowel preparation

Disclosure

- I have no financial relationship to disclose
Instrumentation

Port placement
- Primary port placement:
  - Open Hasson at umbilicus / Palmer's point insufflation at (LUQ)
  - NG tube and higher midline
- Lateral ports generally recommended to be higher if moderately large fibroid
- Consider low lateral ports placement with very large uterus

Laparoscope
- Limitation in viewing around large fibroid uterus
- 30° scope
  - Allows visualise around fibroids, from top, side and under
  - Nag more difficult to use thus needs more skilled assistance
  - Can clash with instruments

Strategy
- Flexible and innovative in sequence of steps
  - Constantly check the anatomy for improved opportunity and impending danger
  - Change of scope, port configuration or even use of additional ports

Strategy for vascular pedicles
- Secure haemostasis
  - Cauterize generous segment of vascular pedicle, on both side to minimize bleeding from manipulation
  - Avoid prolong cauterization at the same site to prevent charring
    - Alternate area of cauterization to allow cooling / cooling with irrigation fluid + fuel for cautery/ Strip off the charred layer of tissue
  - Avoid blood in the area of cauterization
    - Clamp / compress the bleeding vessel, aspirate, clean bipolar forceps

Upper pedicles
- Usually first vascular pedicles in standard TLH but may not be accessible early on with large fibroid uterus
- Ovarian preservation
  - Divide and conquer:
    - Round ligament, Tube, Ovarian ligament, vascular
- Salpingooophorectomy
  - Skeletonise the IP pedicle with releasing incision to separate the ureter from harms way
Uterine blood supply

- Uterine artery 70%
- Ovarian 25%
- Vaginal artery 5%

Uterine artery ligation

What are you going to do?

3 approaches to uterine artery ligation

Anterior Approach to Laparoscopic Uterine Artery Ligation

Instruments and Techniques:

- Anterior Approach to Laparoscopic Uterine Artery Ligation
- Thomas van MD, OP, MD, MDS, S. Obstetrics,M. Do.
- David Rosen, MD, FRCSC, Gynaecology, Mississauga, ON.
- And Pavan Chao, M.D., FRCSC.

Superior vesical artery

Vaginal Manipulation for LU

- Articulated uterine manipulator is essential
- Vaginal manipulation is relatively limited for fundal lateral movements but still very helpful with cervical manipulation
- The most important manipulation is pushing up of the CERVIX
- Essential for Laparoscopic uterine artery ligation through Ant Approach
- Create “lateral flexion” by moving the cervix to pelvic side all
Low port placement

- My first task in difficult fibroid uterus is to secure the uterine artery

Low port placement better access

- Better access

Low port placement better instrument control

- Better instrument control

Low port placement allow better laparoscope position

Morcellation

- Vaginal
- Vaginal after lap bivalving, (Care of electrosurgery)
- Lap knife morcellation
- Lap power morcellation
- Lap in-bag power morcellation
- Minilaparotomy (Consider performing part of hysterectomy eg vaginal cuff closure also through minilap)
2.5kg TLH

In situ lap knife morcellation plus mini-laparotomy

1.7kg fibroid uterus - Blt hydrenephrosis

1.7kg fibroid uterus - Blt hydrenephrosis

1.8kg laparoscopic myomectomy

4.2kg Lap assisted myomectomy
Step by Step TLH of 1.6kg uterus

Lap knife morcellation

In-Bag morcellation

Conclusion

- Maximize chance of successful completion of LH for LU by optimizing preoperative preparation
- Be flexible and innovative on approaching each steps of LH for LU
- Consider low port placement for very large uterus
- Consider uterine artery ligation and maximize vaginal manipulation

Thank you very much for your attention

References

New Technology
Where Are We, Where Are We Headed?

Douglas N. Brown, MD, FACOG, FACS
Chief, Minimally Invasive Gynecologic Surgery
Director, Center for Minimally Invasive Gynecologic Surgery
Massachusetts General Hospital
Harvard Medical School

Objectives
At the conclusion of this activity, participants will be better able to:

- Describe Laparoendoscopic Single-Site Surgery (LESS), the potential benefits, challenges, specialized equipment
- Describe Mini-Laparoscopy and the potential benefits of this unique approach
- Identify newly developed combined ultrasonic and advanced bipolar technology and their application in various surgical procedures

Where Are We Now?

- Multiple Incisions in Laparoscopy
  - Historically necessary, not inherently good
  - Function of equipment limitations in meeting technical needs

Disclosure Slide
- I have no financial relationships to disclose

LESS – LaparoEndoscopic Single-site Surgery
- Laparoscopic procedures using one instead of multiple incisions
LESS: Everybody’s *NOT* doing it

- Laparoscopy with multiple incisions is already challenging…(LESS is even more so)
- Any additional learning curve related to LESS must be balanced by value to the patient and/or surgeon

LESS: Benefits Outweigh the Learning Curve

- Establish benefits
  - Incisions are of no inherent benefit
  - Procedures should be accomplished with minimal trauma
  - One small incision is less traumatic
  - Less opportunity for complications

LESS: Benefits Outweigh the Learning Curve

- Every surgical approach is difficult at first
- Facilitate learning
  - Instruction, **Equipment**
  - Focus on Simple Surgical Technique (**KISS**)
  - Crawl before run

Anticipated Advantages of LESS

- Improved Cosmesis

Anticipated Advantages of LESS

- Fewer Incision-Related Complications:
  - Port-site hernia
  - Trocar-related injuries
  - Pain and analgesia use
- **Bonus:**
  - Facilitates specimen retrieval
  - Improved patient satisfaction

Port-Site Hernia
LESS Investigation/Data

Published Experience:
- Feasibility
  - Case reports & series
- Comparison
  - Case-control series
  - RCT’s

What Do you Need? - Instruments
- Access device (port)
- Camera
- Graspers/dissectors
- Energy-based instruments

Challenges Related to LESS
- Technical/operative
  - Loss of “triangulation”
  - Instrument/hand collision

Camera System
- Usual zero degree in umbilicus doesn’t function well
Flex-Tip Camera System

Flex-Tip Instruments

- Needs:
  - Tissue separation and reapproximation
  - Avoid hand collision
  - Recreate Triangulation
    - Two instruments directed at surgical target from different angles facilitates traction/counter-traction

Flex-Tip Instruments

- Non-energy
- Energy
Real-World LESS – Tips for Success

- Practice in **Dry Lab** (BOX) or **Wet Lab** (Pig Lab)
- Apply technique from lab to tissue in the pelvis
- Develop traction/counter-traction using the grasper, uterine manipulator, or fixed body part
- *Think in terms of traction toward or away from yourself*

- Stand “above” shoulders
- Know your instrument needs and options
- Crawl before you run
  - Prophylactic BSO before HYST
  - Thin before obese
  - Safety first
  - Low threshold for conversion to multiport
Mini-Laparoscopy

2.7 mm to 3.5 mm
Needle Insertion versus 3.5 mm Trocar
Camera (STORZ)
Irrigator
Monopolar Energy
Bipolar Energy
Graspers

Combined Energy Source

- HARMONIC ACE®+7 (Ethicon Endo-Surgery, Inc., Somerville, NJ 08876)
  - Integrated hand instrument that delivers the benefits of both advanced bipolar and ultrasonic energy in a single device
  - FDA Approved for up to 7 mm vessels

Videos
Combined Energy Source

- **THUNDERBEAT™** (Olympus Surgical Technologies, Southborough, MA 01772-2104)
- Integrated hand instrument that delivers the benefits of both advanced bipolar and ultrasonic energy in a single device
- FDA Approved for up to 7 mm vessels

Where Are We Headed?

Maximizing The Minimum:

**Total Cost, LOS, Recovery (work force)**
- Simple Surgery Becomes More Complicated
- Need for Advanced Skill Sets
- Additional Training
- Credentialing

Is this Patient Driven? Or Sound Economics?

References

Is Hysterectomy an Outpatient Surgery?
A New Frontier of Safe and Cost Effective Healthcare in America

Presented by Richard B Rosenfield, MD
Director of Gynecology
Pearl Women's Center
Portland, OR, USA

Disclosure
I have no financial relationships to disclose.

Welcome to the Pearl Surgicenter

The Simple Facts
- 600,000 hysterectomies per year in the US, second most common operation performed on women (cesarian section being #1)
- Escalating cost of technology- single use instruments, robotics, surgical time
- Need for reduced cost at all levels, patients facing higher copays/deductibles as small employers forced to eliminate benefits, use exchange, etc
- This is a 10 Billion dollar annual industry
Technology

• Medical Device companies make single use high cost instruments
• Very little surgeon regulation of equipment choice, surgical time audits, etc.
• Innovations tend to cost time and money
• Seldom is there an opportunity to advance technology AND save money

Cost Containment?

$2 million
$30k generator, per case rates upwards of $350-500/case

Wall Street Journal Feb 2013

"robotic surgery costs one third more than other minimally invasive surgery with little added benefit"
- Pivotal information like this needs to be shared
- the average total cost to the hospital for the robotic hysterectomy was $8868, compared to $6679 for laparoscopic and $6651 for open"
- JAMA Feb 2013
  - Compare this to ASC cost of laparoscopic hysterectomy, under $4000
  - ASC’s perform under 1% of Gynecology surgery, and at least 60% of hysterectomies are still performed via open techniques

Outpatient Hysterectomy - What do the experts say?

• JSLS, Journal of Laparoendoscopic Surgeons, Jul-Sept 2011, Gauta MD
  "Outpatient Hysterectomy is a safe procedure that may improve patient satisfaction surgically and financially, and either approach (LAVH, TLH) is well tolerated by patients"

Outpatient Hysterectomy - What do the experts say?

• JMIG Journal of Minimally Invasive Gynecology, Nov 2012, Kivnick MD et al
  "Laparoscopic hysterectomy is a viable option or women with very large uteri (500g-4500g). Same day discharge of clinically stable patients can be safely implemented" (446 cases reviewed)

Outpatient Hysterectomy - What do the experts say?

• JMIG, November 2008, Kivnick and Yera, Kaiser Perm CA
  "Laparoscopic Hysterectomy can be performed on an outpatient basis in a community hospital with low rates of complications and re-admissions... suitable even for patients with very large uteri" (326 cases)
Outpatient Hysterectomy—
What do the experts say?

• JMIG November 2012, Parmar et al

"Same day discharge for patients who undergo total laparoscopic hysterectomy in an outpatient surgical center is feasible and safe"

CMS is pushing

• Over $7 Billion saved in ASC’s 2008-2011
  - Medicare alone
• Affordable Care Act
  - Each state is looking for solutions
  - Coordinated Care Organizations
    • Need to care for growing population of Medicaid
    • ALL PHYSICIANS will participate within 3 years

Meanwhile at the hospitals...

• Hiring Physicians as employees and practice acquisitions
• Falling prey to marketing of expensive technology to “keep up”—“battle of the robots”
• Physicians with limited exposure to cost data
• Not interested in losing cases to the ASC’s
• Media frenzy on safety (morcellation)

Ambulatory Surgery Centers

• 85 in Oregon
• 5260 in the US
• 1% of cases are OB/GYN
• Why?
  - CMS assigns codes for acuity/codes
  - Mainly minor procedures
  - Medicare assigned reimbursements are below cost of procedure
  - Commercial payers do not like “carve outs”

Other articles

• Thiel, JMIG, 2003
• Morrison, JMIG, 2004
Pearl Surgicenter

- Large case series of Outpatient Laparoscopic Hysterectomy to date, over 850 cases
- ASCA national meeting, Nashville 2014
- ACOG national meetings 2010-2012
- ACOG sectional meeting 2008
- AAGL, case series of 500 patients, 2010
- AAGL international meeting, Sicily, 2007

Why is this not happening faster?

- Lack of surgical volume
- Lack of training
- Lack of Insight into the Economics
  - Payors
  - Employers
  - Patients

Outpatient Hysterectomy-
Clinical Side

- Benefits for the Patient
  - Decreased Infection Rates
  - Cost Effective
    - single most expensive determining factor of surgical cost is venue
  - Customer Service
  - Avoiding Hospital, Less Stress and Anxiety

Outpatient Hysterectomy

- Benefits for the Surgeon
  - Lower Morbidity
  - Highly Efficient
  - Same Day Discharge- no need to make hospital rounds

What if?

- Skilled surgeons throughout the country affiliated with ASC’s to provide Outpatient Hysterectomy
- Improved referral networks
- More efficient flow
- Reproducible algorithms
- Better outcomes, Lower Infection, Higher Satisfaction, LOWER COST
- 5% would yield $150Million in Savings

Precis

Outpatient laparoscopic hysterectomy is safe, feasible, and cost effective when performed in the setting of a freestanding ambulatory surgical center with SAME DAY discharge home
Feasibility Study

- Prospective Case Study (Canadian Task Force classification II-3)
- Pearl SurgiCenter (a private practice, physician-owned ambulatory surgery center), Portland, Oregon, USA
- 502 consecutive patients undergoing laparoscopic hysterectomy from October 2005 through April 2010

Interventions

- Laparoscopic supracervical hysterectomy (LSH) or total laparoscopic hysterectomy (TLH) performed in a completely outpatient setting with same-day discharge to home

Operative Technique

- Reproducible, Trainable approach to surgery
- Ability to train, observe staff and nurses with realtime webcast technology
- Cost effective instrumentation (purchase contracts for reduced price from med device companies)

5 Trocar Approach

Proper Set Up

Safe?
Why do we have complications?

- Surgeon or Environment?
- What variables can we control?

Surgeons are often the victims of their surroundings

- How low does the OR table go?
- What is max degree of trendelenberg?
- Do you know your crew?
- What are the names of the tools you are using?
- Have you selected the tools in the laparoscopy set?

Case Series

- 559 women were scheduled for surgery
- Of these, 502 patients had surgery at ASC-439 LSH and 63 TLH
- Remaining 57 patients were excluded due to limitations in insurance coverage for out-of-network facilities
- No exclusions for medical/surgical risk

Table 1

<table>
<thead>
<tr>
<th>Demographic information for patients undergoing outpatient laparoscopic hysterectomy in an ambulatory surgical center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: 43.6 years</td>
</tr>
<tr>
<td>BMI: 29.1</td>
</tr>
<tr>
<td>Uterine Mass: 110.0 g</td>
</tr>
</tbody>
</table>

- Mean: 15.5
- Range: 7-50.5

- Number of prior surgeries among patients with prior surgeries: 1.7
- Mean, range: 1-6

Table 2

<table>
<thead>
<tr>
<th>Surgical indications for patients undergoing outpatient laparoscopic hysterectomy in an ambulatory surgical center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
</tr>
<tr>
<td>Cervical/Endometrial 36.0%</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Anemia 10.0%</td>
</tr>
<tr>
<td>Hypertension 8.0%</td>
</tr>
<tr>
<td>Pre-existing diabetes 4.0%</td>
</tr>
<tr>
<td>General anesthesia 8.0%</td>
</tr>
<tr>
<td>Urinary Frequency 3.0%</td>
</tr>
<tr>
<td>Bladder perforation 1.0%</td>
</tr>
</tbody>
</table>
Table 3
Surgical and discharge times for patients undergoing outpatient laparoscopic hysterectomy in an ambulatory surgical center

<table>
<thead>
<tr>
<th>Time to discharge</th>
<th>LSH</th>
<th>TLM</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 min</td>
<td>66.6 (39.9)</td>
<td>121.5 (64.9)</td>
</tr>
<tr>
<td>60 min</td>
<td>147.5 (52.6)</td>
<td>164.2 (58.4)</td>
</tr>
</tbody>
</table>

LSH: laparoscopic hysterectomy (N = 40);
TLM: total laparoscopic hysterectomy (N = 50);
Mean ± SD

Table 4
Operative times are impacted somewhat by procedures performed in addition to laparoscopic hysterectomy

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Discussion

- Direct and indirect cost of Laparoscopic Hysterectomy LOWER when avoid use of robotics, avoid use of hospital
  - WSJ article
- Hospital cost of hysterectomy
  - $10,000-17,000 (this is older than JAMA reference)
  - Emphasizes variation in hospital cost and assessment of cost
  - Charges up to $90,000+ in US
- JAMA quotes hospital cost of hysterectomy to be
  - $6651 (open)
  - $6679 (laparoscopic)
  - $8868 (robotic)
- These were averages in metadata, massive variation from institution to institution
- ASC cost 30-40% less per case

Table 5
Adverse events in patients undergoing outpatient laparoscopic hysterectomy in an ambulatory surgical center

Table 6
Adverse events requiring hospitalization

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Discussion

- JAMA quotes hospital cost of hysterectomy to be
  - $6651 (open)
  - $6679 (laparoscopic)
  - $8868 (robotic)
- These were averages in metadata, massive variation from institution to institution
- ASC cost 30-40% less per case
Economic Consideration

• Inpatient Hysterectomy cost and billed charges, compiled with new technology are increasing annual spending on Hysterectomy in the US
• Outpatient Surgery cost and charges are much lower
• Each state is looking to find new and innovative ways to save money

Economic Consideration

• Hospital charges in US range $16-70k
• Allowables trend at $16,000 - 18000
• $9.6 billion spent per year on hysterectomy in US

Economic Consideration

• Cost in ASC < $5,000 per case
• 50% savings on cost compared to all published data
• Billed charges and contracted rates significantly lower than hospital
• 750 cases x $5000k = 3.75M savings (low estimate) over ~ 5 yrs
• We need to make the change before it is made for us, and this IS happening

Discussion

• Currently > 850 cases in our series
• Traditional Straight Stick Laparoscopy is alive and well- no need for robotics, no hospital
• Protocol and Technique is reproducible and scalable
• Opportunity for Medicaid population requiring this and other operations to be attractive to surgeons

Outpatient Hysterectomy

• Safe and Feasible (now > 830)
• Complications and Adverse Outcome date significantly lower than national hospital standards (2 hospital transfers)
• Less Expensive and more efficient
• Better Outcomes and higher patient satisfaction
• Inline with ACA and CCO’s
  - Efficient care
  - Outcome data
  - Infection rate

Where we were, 1929
Where we are today…

A new road…

Your old road is
Rapidly agin'
Please get out of the new one
If you can't lend your hand
For the times they are a-changin'.

-Dylan

References

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- Wright JD, JAMA, 2013 Feb 20;309(7):689-98
- Parmar et al, JMGJ, November 2012
- Kivnick and You, JMGJ, November 2008
- Thiel, JMGJ, 2003

THANK YOU !!!
CULTURAL AND LINGUISTIC COMPETENCY

Governor Arnold Schwarzenegger signed into law AB 1195 (eff. 7/1/06) requiring local CME providers, such as the AAGL, to assist in enhancing the cultural and linguistic competency of California's physicians (researchers and doctors without patient contact are exempt). This mandate follows the federal Civil Rights Act of 1964, Executive Order 13166 (2000) and the Dymally-Alatorre Bilingual Services Act (1973), all of which recognize, as confirmed by the US Census Bureau, that substantial numbers of patients possess limited English proficiency (LEP).

California Business & Professions Code §2190.1(c)(3) requires a review and explanation of the laws identified above so as to fulfill AAGL’s obligations pursuant to California law. Additional guidance is provided by the Institute for Medical Quality at http://www.imq.org

Title VI of the Civil Rights Act of 1964 prohibits recipients of federal financial assistance from discriminating against or otherwise excluding individuals on the basis of race, color, or national origin in any of their activities. In 1974, the US Supreme Court recognized LEP individuals as potential victims of national origin discrimination. In all situations, federal agencies are required to assess the number or proportion of LEP individuals in the eligible service population, the frequency with which they come into contact with the program, the importance of the services, and the resources available to the recipient, including the mix of oral and written language services. Additional details may be found in the Department of Justice Policy Guidance Document: Enforcement of Title VI of the Civil Rights Act of 1964 http://www.usdoj.gov/crt/cor/pubs.htm.

Executive Order 13166, “Improving Access to Services for Persons with Limited English Proficiency”, signed by the President on August 11, 2000 http://www.usdoj.gov/crt/cor/13166.htm was the genesis of the Guidance Document mentioned above. The Executive Order requires all federal agencies, including those which provide federal financial assistance, to examine the services they provide, identify any need for services to LEP individuals, and develop and implement a system to provide those services so LEP persons can have meaningful access.

Dymally-Alatorre Bilingual Services Act (California Government Code §7290 et seq.) requires every California state agency which either provides information to, or has contact with, the public to provide bilingual interpreters as well as translated materials explaining those services whenever the local agency serves LEP members of a group whose numbers exceed 5% of the general population.

If you add staff to assist with LEP patients, confirm their translation skills, not just their language skills. A 2007 Northern California study from Sutter Health confirmed that being bilingual does not guarantee competence as a medical interpreter. http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2078538.